

On the Present Formation of a Race in the Tatras Mountains

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"So, you actually once served as Dr. Le Bon's assistant?" you ask. Yes, indeed, and what a memorable experience it was. The eminent master, being greatly appreciative of my support for his path-breaking research into racial differences, particularly the instrumental role I played in securing for him an award from the French Academy of Sciences for his spectacular 1879 work, "Anatomical and Mathematical Researches Into the Laws of the Variations of Brain Capacity and their Relation to Intelligence," honored me with an invitation to accompany him in the Summer of 1881 on a scientific mission to Podhale, the region within the Tatras mountains in southern Poland. My official duties were to be that of "photographer." Although my camera-wielding skills were perhaps not quite as expert as those of the master's, I immediately accepted the offer, for I desired to learn as much as possible from Dr. Le Bon—his methods, insights, etc.—by working alongside him.

I was, of course, a young man in 1881—fortunately. The Tatras mountains, with their Alps-like ruggedness and unmerciful weather, will vanquish all but the bravest and fittest. Their reputation for this is well-known. You may recall that during the Great War in 1915 General Brussilov, no doubt to avoid catastrophic losses (which, however, occurred elsewhere later on), chose not to direct the Czar's army into this inhospitable area. Dr. Le Bon and I, by contrast, actively sought out Podhale and, as you are now about to discover, were not vanquished.

"On the Present Formation of a Race in the Tatras Mountains," published in the March 18, 1882 issue of *Revue Scientifique*, communicates the main results of Dr. Le Bon's 1881 scientific mission. This brilliant paper plainly demonstrates the master's approach to determining and portraying a race. A combination of anthropological measurements, psychological analysis, linguistic studies, and where possible, historical accounts, must all be utilized in any meaningful effort to differentiate a race. Lastly, Dr. Le Bon would add that properly-made photographs of the subjects studied and the environment in which they live provide uniquely valuable information about the people, and should be included in any racial study report.

I trust that I performed my duties well.

Robert K. Stevenson

ON THE PRESENT FORMATION OF A RACE IN THE TATRAS MOUNTAINS

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In our previous article devoted to the state of anthropology in France, we examined the results that the current methods applied to the study of races had provided and could provide. We demonstrated the extreme insufficiency of these methods, and showed that professed anthropologists, with the pretense of embracing all the sciences, hardly troubled themselves during their travels but to measure skulls and skeletons; that the majority of the measurements asked for by these travellers were entirely useless and caused them to waste precious time.¹ We pointed out that it is silly to believe that one knows something of a people just because one measured some bones, that many more important studies assert themselves to the attention of such travellers. We finally arrived to this conclusion that, in order to assemble accurate and comparable records concerning the physical, intellectual and social state of the human races, there was urgency to draft in the form of a questionnaire very simple instructions.

The approval that the most authoritative anthropologists have expressly given to these notions, and the weakness of the criticisms formulated against them by professed craniologists, little anxious to see the uselessness of their research divulged, only serve to confirm us in the principles that we have set forth. Setting aside for now theoretical considerations, we shall proceed to consider the practical side of the question and investigate how anthropology can be carried out abroad. Until the above simple instructions of which we have spoken exist, we believe it useful to indicate what are--from our personal experience--the data that a traveller can easily collect on a human agglomeration visited by him. It is evident that depending on the special knowledge of the traveller and the populations he observes, the questions to study can be vastly different; but, for each people there is a common ground that the reader can easily make out and which is important to know. It is only, moreover, by way of suggestion that we have given the indications that will be seen to follow.

I must first make two remarks about the circumstances that induced me to undertake this study.

Regarding the particular circumstances, I determined on my way back from a trip to Russia to visit the Tatra mountains, a most curious but yet very little known region to our compatriots, being that, according to what the oldest mountainfolk said, I was the first Frenchman to have travelled through their country. I found here a short people inhabiting a territory which is surrounded on all sides by steep and nearly inaccessible mountains, beyond which exist nations speaking different languages from that of the mountainfolk and with which the latter has not united. Exclusively devoted to brigandage less than a century ago, they are today very honest and hard-working. Despite a climate so harsh that one is almost obliged to go up to the extreme north

of Europe in order to find a similar one, despite very infertile soil and an alimentary regimen truly Lacedaemonian (since oatmeal, milk and water compose pretty much the only elements), the Tatras mountfolk of which I have spoken live in a state of remarkable prosperity. By their most lively intelligence, their artistic and literary aptitudes, as well as by their outward aspect, they clearly distinguish themselves from their neighbors, who are situated though in conditions of existence considerably more favorable.

I naturally wondered from where this curious population could have come, what influences of crossbreeding and the environment could have given birth to it, why, in spite of the very difficult conditions of existence, it presents a superiority so great.

The rare works published about these mountains and which I had studied before my trip were entirely mute on these questions. The memoirs written about the Tatras, and notably the fundamental work published in the *Mittheilungen* by Koristka (of Prague) fifteen years ago, only discuss the physical geography. It seemed interesting to me to seek out the solution to the problem which presented itself before me.

The answer to these inquiries is recorded in a report which has appeared in the *Bulletins de la Societe de geographie de Paris*.² The reader who peruses it will see how one can quite easily, with the resources at the disposal of a traveller, arrive at a sufficient knowledge of the physical, intellectual, moral and social state of a people, how it was possible for me to clearly differentiate the observed population from the neighboring populations and how, after having reconstituted its past with the tools of anthropology, psychology and linguistics, it was easy to bring to light the influences of crossbreeding, natural selection, and the environment which have given birth to the present race. Simply wishing to present an idea of the results provided by the very uncomplicated methods to which I have had recourse, I shall limit myself to giving a succinct summary of each section.

Geography and Ethnography of the Tatras. -- Before entering upon the study of a people it is important to first understand the land where they live, their environment, as well as the populations which surround them and have been able to influence them. With such records obtained about these elements of valuable information, one is put on the scent of the research to effectuate. We can then begin with a rapid examination of the country. Our first pages are devoted to the geography of the Tatras, mountains whose beauty and wild aspect one can only compare to the most picturesque regions of Switzerland. The reader will easily convince himself of this by examining, in the journal *le Tour du monde* of last year, the reproductions of the photographs that we have executed in this country.

It is at the foot of these mountains that the territory named Podhale exists, where the villages inhabited by the short people of which we have undertaken this study are situated. This territory is hemmed in by a belt of not easily accessible mountains, so that the Podhaleans there are almost as isolated as those living on an out-of-the-way island in the ocean.

From the point of view of ethnography, their isolation is just as complete. Beyond the crown of the Tatras mountains diverse peoples are met with: Ruthenians, Slovaks, Magyars,



By their lively intelligence, their musical, artistic, and literary aptitudes, the people of the Tatras mountains clearly distinguish themselves from their neighbors. Wood carver (bottom) is creating the image of Janosik, the brigand hero of the Podhaleans.

Germans, etc., speaking different languages from that of the Podhaleans³ and with whom the latter, as proven by an inspection of the registers of the parish churches, have never united. It is only on the northern frontier of the country that the Podhaleans find themselves in touch with other individuals understanding their language.

This same section contains various records concerning the number of inhabitants of Podhale and the very different peoples who encircle them. It is accompanied by a map of the region, in the lower portion of which we have tried to give an exact idea of the country's configuration, by means of a particular system of geometric panorama possessing parallel drawing plans that we have laid out with the assistance of the engineer Monsieur Roginski. It is a way of representing the relief of a country which will, I believe, interest geographers. In fact, the only other methods that geographers presently possess for expressing the relief of the land surface are, as one knows, level curves, hachures, and perspective panoramas. The first can present an idea of the relief of a country only after one performs a very long and necessary labor in order to transform them into profiles. Hachures do not give but a quite warped notion of the actual height of mountains. Perspective panoramas, meanwhile, deform objects so much that one is only able to acknowledge them as what originates from a picturesque representation.

Along with our geometric panorama, we have presented, besides, a perspective panorama of one of the most interesting parts of the Tatras, executed by means of the photographs that we took in the country. The perspective panorama shows things as one sees them, but not as they are. The geometric panorama, which does not deform objects, shows them as they really are, but not as one sees them. Respecting this latter panorama, one can carry out all the measurements that one would execute on the terrain itself. Nothing similar is possible with the former.

The Environment. -- From various indications relative to the geography of the country--the flora, fauna, and climate--we investigated if the environment where the Podhaleans sojourn resembles that in which the neighboring populations live or if it differs. This comparative study clearly showed that Podhale differs from all the adjoining regions by possessing 1) a very harsh climate, 2) a barrenness of the soil which binds its inhabitants to an entirely unique alimentary regimen, and finally 3) by its having chemical or physical conditions, difficult to distinctly define given the present state of science, but of which the visible result is that goiter, which spreads itself over all the populations bordering Podhale, is unknown within this region. The influence that this special environment is able to bear upon the formation of the race living in Podhale is studied in another section.

Economic and Social Conditions of Existence. -- After having researched the former conditions of existence of the inhabitants of Podhale, establishing the generality of brigandage to a somewhat recent time as well as determining the aptitudes that this kind of life is bound to create, we have examined the present conditions. The state of landed property, agriculture, and industry, the alimentary regimen of the mountainfolk, their sources of income, their expenses, the state of the family, their manners and customs, etc. have been studied in turn. Not being able in this summary to enter into any detail upon these different questions, we shall limit ourselves to calling attention to the alimentary regimen. It is, besides, easy to describe, for the mountainfolk's diet is composed almost entirely of oats during the winter and exclusively of a special preparation of

sheep's milk over the summer. Only the most vigorous natures are able to withstand such a modest diet and rigorous climate. Of the eight or ten infants that the majority of Podhalean families produce, only a small number reach adulthood. In this manner there operates on each generation a selection process which only permits the strongest and most resistant individuals to live.

This section concludes with a comparison between the Podhaleans' economic and social conditions of existence and those of all the neighboring populations. This comparison shows that in spite of an extremely harsh climate, an exceedingly poor soil, the Podhaleans occupy, as much from the physical point of view as from the intellectual point of view, a situation very much more favorable and prosperous than their neighbors.

Psychology of the Race. -- The description of the intellectual and moral aptitudes of a race providing, in our judgment, information substantially more important than that furnished by the description of some skeletons, we have tried to thoroughly investigate the psychological state of the Podhaleans. The mental constitution of a people being mainly derived from its past state, we have to study this past state. But the small population of Podhale is one of those which does not appear in history, and therefore for this reconstitution we have had to have recourse to the study of their legends and tales. These are then the kind of important records which modern historical science is beginning to fully appreciate. Properly interpreted, such records throw a very bright light on the way of thinking and feeling of the peoples who have given birth to them.

The psychological state of the Podhaleans' ancestors having been reconstituted by the qualities of the personages of their legends, we next studied the mental constitution of their present-day descendants, that is to say, the particularities of their character and intelligence. We have pointed out the development of their imagination and their love of the marvellous, their literary and very extraordinary musical aptitudes, their religious sentiments, their superstitions, and the state of their morality. The study of this latter has provided us with a new proof of the following fact which we have previously insisted upon in our prior work--that is, of the complete independence existing between the development of religious sentiments and morality.⁴ At a time not that remote, the mountainfolk devoted themselves entirely to robbery, and yet they were extremely religious. The priest and the highwayman were at that time the powers who possessed the most prestige. The first represented the celestial powers; the second, the person whose power was the most to dread. Never did one set out on an expedition to conduct some sort of pillage without first appealing to God and the saints for the success of the enterprise. The legends that circulate throughout the country, notably the one of the brigand Janosik that we have related, are replete with evidence of the protection which heaven accorded to the highwaymen. It is asserted that the old church of Saint Anne, at Nowy Targ, was built by some thieves in gratitude for the divine protection obtained for one of their expeditions.

Physical Qualities of the Race. -- Having established that the psychological qualities of the Podhaleans clearly differ from those of the surrounding races, it was interesting to investigate whether these psychological differences corresponded with the anatomical differences.

In order to entirely steer clear of a discussion regarding the interpretation of the word "race," so much debated nowadays, we have ascribed to it the most generally adopted sense and have indicated that we simply mean by this expression a union of individuals possessing common qualities which are regularly transmitted by heredity. Two races will be different if the qualities transmitted by heredity are different for each. Among men, as with animals, the title of race can only be acquired when, through acts of crossbreeding repeated over a long time, heredity has fixed in the individuals living together uniform qualities which reappear from father to son with regularity and constancy. The inhabitants of the United States or the French themselves will perhaps form one day a race: they do not make up one yet. Too many ill-mixed diverse populations compose them.

Our anthropological measurements have been carried out on 50 individuals of the masculine sex.⁵ The numbers and totals that these measurements have generated, and which we shall reproduce later on, gave us the following indications: short height, very great brachycephalism, voluminous skull. Half of the subjects observed had blond hair, and the rest auburn or dark-colored hair; 50 percent had a straight nose, 30 percent an aquiline nose.

The study which was undertaken not only on the individuals that we had measured and photographed,⁶ but also upon all those that we had encountered, led us to recognize that the different physiognomies observed among the Podhaleans of the Tatras amount to two fundamental types more or less pure that one meets with quite often, and whose description follows.

The first type presents the following characteristics: roundish and even figure, cheekbones often prominent, blue or gray eyes (very rarely dark-colored), blond or auburn hair (hardly ever dark), nose frequently turned up.

The second type, more numerous than the preceding, presents as general characteristics the following: generally elongated figure, straight or often aquiline nose (this latter shape is most rare among the Poles and Ruthenians), light or dark-colored eyes--but most often light, with the hair presenting all the nuances from clear blond to the deepest black. Exceedingly rare among individuals belonging to the first type, this latter dark hair tint, by contrast, is met with in a third of the cases among those individuals belonging to this second type.

The first type that I have just mentioned is frequently found among the neighboring races, but I consider the second as special to Podhale, at least in the sense that it is very much more numerous here than in all the surrounding populations.

The frequent association within each of the two preceding types of characteristics belonging to the opposite type (for example, blue eyes with dark hair) proves that these two types have been intermixing with one another for a long time. We have, besides, clear proof of this by the intermediate forms that link the two extreme types that we have described and who are by far the most numerous. Whenever these intermediate forms become the overwhelming majority, the fundamental types, from which these forms are derived and of which they are nothing more than atavistic reminiscences already quite attenuated, will have disappeared, and the present race in

course of formation will have a homogeneity that it tends toward possessing, but does not yet possess.

But, even though this homogeneity is not yet complete, it is nevertheless much more realized here than among the majority of other races that we have had the opportunity to observe. Whatever may be the physiognomic type to which the inhabitants of Podhale belong, all possess a pronounced brachycephalism, while at the same time one generally counts among the neighboring races about 12 non-brachycephalics out of every 100 subjects. Concerning the 50 Podhaleans observed, I did not find a single one who was not brachycephalic. As for the development of the volume of the skull, a most important quality, because it is one of the most valid of those qualities that distinguish the superior races from the inferior races, I shall not now lay stress on it here as I'll soon come back to this matter.

It will perhaps not be useless to remark in passing that the anthropological qualities of any human race only have value because of the manner in which they are associated, and above all by their frequency. There are scarcely any qualities which one can say exclusively belong to one race. The most obvious are only of importance by their frequency. It is not only among the Mongols and the Chinese that one finds oblique eyes, but it is among these peoples that one encounters the largest number of individuals possessing such eyes. Because of its frequency, besides its association with other special characteristics, such as the color of the skin, this quality acquires a great value from the point of view of making classifications. Likewise for all other particularities, no matter what--prognathism or prominent cheekbones, for example. Such marks are not the exclusive attribute of any people since, in reality, one finds among all peoples individuals who possess them. Only these marks' frequency and their constant association with other qualities form the natural endowment of certain races and enable one to make a distinction between these races.

Differentiation of the Race. -- After having determined the anthropological qualities of the race existing in Podhale, it remained to examine the analogies and differences that she presents with the neighboring populations. As our verifications of fundamental differences allowed us to affirm the existence of a novel race, it remained for us to research which conditions of crossbreeding, the environment, or natural selection could have caused its formation.

Our comparative study, in order to be conclusive, was obliged to take account of all the populations surrounding Podhale; but among them, there were some--the Magyars and the Germans--that we could eliminate from the very first. These peoples, sufficiently far away from the frontiers of Podhale, form isolated and different islets such that the Podhaleans, by their social situation and language, never coalesced with the former and were consequently not influenced by them. What remained to be studied were the Jews and Poles of Galicia as well as the Ruthenians and the Slovaks on the Hungarian side of the Tatras. To repeat our measurements on them was needless, because this work had already been done on the first three peoples by a learned anthropologist of Krakow, Dr. Kopernicki. I therefore only had to compare my measurements to his in order to immediately perceive the analogies or the differences that may exist between the compared populations.

Among the races measured by the author that have just been mentioned, I did not visit the Slovaks on the southern side of the Tatras; but the differences existing between the Podhaleans and the Slovaks are so manifest that one perceives them at first sight. Independently of the differences of language, diet, and way of life, the Slovaks and Podhaleans present considerable external differences. The Slovaks are individuals of tall height and large stature, most sought after for this reason during the era when the regiments of Hungarian grenadiers were only composed of individuals of gigantic height; but at the same time they are thick-headed and lazy. The Podhaleans, by contrast, are short in height, general appearance rather slim than robust, and in a word have a constitution much less vigorous than the Slovaks; but, instead of being like them lazy and stupid, they are most lively and sharp. Relations are, moreover, infrequent between these two peoples; they maintain quite poor communications, and for a very long time no one has ever gotten married between them. The special research conducted at our request by Dr. Kopernicki of examining the civil state registers of the border villages did not reveal to him any example of a marriage between the Slovaks and the Podhaleans.

Here now is our table of comparison made between the various populations measured by Dr. Kopernicki and those upon which we have effectuated corresponding measurements. Dr. Kopernicki having expressed his totals as averages, we have done the same in order to render our results comparable. The reader who chooses to refer to the table presented a little further on will easily see to what extent groupings in series show more convincing and conclusive results than do the averages.



Dr. Le Bon was the first Frenchman to visit the Tatras mountains region.

<u>Skull Measures</u> (in centimeters)	<u>Jews</u>	<u>Ruthenians</u>	<u>Poles of Galicia</u>	<u>Podhaleans of the Tatra</u>
Average cranial circumference. . .	54.3	54.6	54.3	56.4
Anterior-posterior diameter.	18.3	18.2	18.0	18.5
Transverse diameter	15.3	15.2	15.2	15.9
Cephalic index. . .	83.5	84.3	84.4	85.7
<u>Hair Color</u> (in Percent %)				
Blond	23.2	31.9	45.0	32.0
Auburn	37.0	34.0	36.4	34.0
Dark/black	<u>39.8</u>	<u>34.1</u>	<u>18.6</u>	<u>34.0</u>
<i>Total</i>	100.0	100.0	100.0	100.0
<u>Eyes</u> (in Percent %)				
Light-colored	45.5	60.7	70.1	70.0
Dark-colored	<u>54.5</u>	<u>39.3</u>	<u>29.9</u>	<u>30.0</u>
<i>Total</i>	100.0	100.0	100.0	100.0
<u>Nose</u> (in Percent %)				
Straight	59.6	68.1	67.4	50.0
Aquiline	30.9	6.1	6.4	29.5
Turned-up	<u>9.5</u>	<u>25.8</u>	<u>26.2</u>	<u>20.5</u>
<i>Total</i>	100.0	100.0	100.0	100.0
<i>Average height (cm.)</i>	162.3	164.0	162.2	159.4



66% of the population of the Tatras mountains possess blond or auburn hair,
as is evident in these Podhalean children.

Almost as important a quality to add to the preceding ones, we must mention as well the relative frequency of curly hair among the Podhaleans (16%), compared to its extreme rarity among the other Galicians (1/3%).

An examination of the preceding table shows that the Podhaleans present with the diverse populations of Galicia the following principal differences:

Height shorter than that of the other Galicians;
Anterior-posterior and transverse diameters of the skull, by contrast, larger;
Brachycephalism a little greater, but mainly more general.
Cranial circumference much bigger;
Larger proportion of dark-haired people than among the other Galician Poles;

Considerably higher proportion of aquiline noses among the Podhaleans (nearly 30%) than among the Poles and Ruthenians (about 6%); a large proportion of Jews (almost 31%) also possess aquiline noses.

This high proportion of aquiline noses, so rare among the Slavs, and above all the considerable enlargement of the diameters and circumference of the skull, joined to the special physiognomic type which we have described and the short height of the Podhaleans, clearly differentiates them from the neighboring populations. One can formulate these striking differences by saying that a Podhalean differs as much from the Poles and Ruthenians of Galicia as these two peoples differ from the Jews, that is to say, from one of the races that is the easiest to distinguish from all the others.

The previously mentioned qualities likewise prove that the present-day Podhaleans of the Tatras are by no means the simple result of crossbreeding of the populations that now surround them, because they possess particular qualities that these races do not possess.

Without a doubt, with regard to the aquiline noses, the Jews possess them as much as the Podhaleans; but their influence is not worth examining, because less in Galicia than everywhere else, and less yet in Podhale than in the rest of Galicia, the Jew does not mix with his neighbors. Besides, the Podhaleans have a deep contempt and abhorrence for them.

Among the differences that we have just highlighted, one of the most important is the very great development of the diameter of the skull and of its circumference. This fact, given the intellectual superiority of the Podhaleans, confirms what we have tried to demonstrate in another work--that the dimensions of the skull are always correlated with the state of intelligence, whenever, disregarding the individual exceptions, one considers them in series.

The following table summarizes from this point of view the results obtained. It indicates how many, among 100 given individuals, there are who fall into the various dimension divisions of the cranial circumferences shown in the table's first column.

One of this table's columns has been made with the measurements of 254 cranial circumferences of Galician peasants from the regions adjoining the northern border of Podhale (the districts of Limanowa and Zywiec), that Dr. Kopernicki has kindly consented to extract for us from the registers of the anthropology section of the Academy of Sciences of Krakow. The next column has been calculated by means of the 50 Podhaleans measured at Zakopane, at the very foot of the Tatras. The latter two columns, owed equally to personal research, are extracts from our report on the variations of skull capacity.



Shepherds with flock and sheep dogs in the Tatras mountains.

<u>Cranial Circumference</u> (in centimeters)	<u>Galician peasants</u> <u>bordering</u> <u>the Tatra</u>	<u>Podhaleans</u> <u>of the</u> <u>Tatra</u>	<u>Middle-class</u> <u>Parisians</u>	<u>Learned and</u> <u>cultured</u> <u>Parisians</u>
50 to 51	3.2	--	--	--
51 to 52	12.0	--	--	--
52 to 53	13.2	--	0.6	--
53 to 54	16.6	6.0	1.9	2.0
	45.0	6.0	2.5	2.0
54 to 55	20.0	8.0	6.2	4.0
55 to 56	18.6	20.0	14.0	6.0
56 to 57	10.9	24.0	24.5	18.0
	49.5	52.0	44.7	28.0
57 to 58	4.5	22.0	24.5	36.0
58 to 59	0.4	18.0	14.9	18.0
59 to 60	0.6	2.0	7.6	8.0
60 to 61	--	--	5.8	8.0
	5.5	42.0	52.8	70.0
<i>Total (%)</i>	100.0	100.0	100.0	100.0
<i>Average Circumference</i>	54.2	56.4	57.1	57.6

SUMMARY OF THE PRECEDING TABLE

Percentage with small heads	45.0	6.0	2.5	2.0
Percentage with average-sized heads	49.5	52.0	44.7	28.0
Percentage with large heads	5.5	42.0	52.8	70.0
<i>Total (%)</i>	100.0	100.0	100.0	100.0

Studying all these numbers provides a strong lesson. First of all, we discover a verification of the following law which was enunciated by us in a previous work--that the hierarchical position of a race is determined by the more or less considerable number of voluminous brains that this race contains. Our tables, in effect, show us this; respecting 100 Galician peasants, there are only 5 whose head circumference exceeds 57 centimeters; with 100 Podhaleans, there are 42; among 100 middle-class Parisians, there are 53; with 100 learned and cultured Parisians, 70.

As for the extremely large skulls, the proportion is even more striking: among the Galician peasants there is only one individual out of 100 whose cranial circumference is greater than 58 centimeters; there are twenty out of 100 among the Podhaleans. Lastly, as regards the skulls that one can characterize as gigantic, one does not ever find them among the Podhaleans nor among the Galicians, whereas there exist eight out of 100 among the learned and cultured Parisians. This fact is quite characteristic, given that the number of learned and cultured Parisians upon which we have carried out our measurements is precisely equal to the number of Podhaleans that we have had occasion to study.

Moreover, one sees from the preceding table that at the same time when the large cranial circumferences prove to be most numerous, the small circumferences become rarer: among 100 Podhaleans, there are only 6 whose cranial circumference is smaller than 54 centimeters; with 100 Galician peasants, there are 45. The differences existing between the Podhaleans and the peoples to which we have compared them are much more eloquently made evident by these numbers than by whatever differences the comparison of averages can express.

This same table further shows us that the Podhaleans form, at least as far as the shape of the skull is concerned, a race much more homogeneous than the neighboring Polish highlanders. Deviations in cranial circumferences are, in effect, significantly greater among the latter than among the former. We have already emphasized this homogeneity respecting another point even more important--the generality of their brachycephalism.

To conclude our preceding discussion, we can say that the firmly established anthropological differences existing between the Podhaleans and their neighbors are as large as those existing between the European races that science has believed itself well-founded in distinguishing. To be sure, we believe ourselves to be equally well-founded, by not just depending upon the anthropological qualities and setting aside the psychological differences, in considering the Podhaleans of the Tatras as constituting a special race differing clearly from all the surrounding races.

How the Present Race of Podhale Has Formed Itself. -- Having demonstrated the fact that the inhabitants of Podhale constitute a race distinctly different from all the adjacent peoples, it remains for us to investigate the conditions of environment, crossbreeding, and immigration that have given birth to it.

Among the influences that we have seen to enumerate, certainly each played its part, and in a direct or indirect way the environment above all had its own role. We have already shown how the environment in which the Podhaleans live, their diet, and way of life differ from that



70% of the Podhaleans have blue eyes, 42% of them large heads;
both of these characteristics are present in this elderly resident of Zakopane.

which the neighboring populations experience. More particularly, we have seen that the infertility of the soil obliges the inhabitants to devote themselves to various trades requiring all their effort and resources; additionally, the conditions of existence are so difficult and the climate so harsh that the majority of infants succumb, and only those then who are possessors of a most vigorous constitution are able to endure these conditions. Under parallel conditions, all the feeble, pitiful, and incapable beings--unfortunates who only the philanthropic institutions of Western Civilization prevent from vanishing--are fatally condemned to die. A similar selection, repeated over the centuries upon the infants and adults, would contribute to form, by the slow accumulation of qualities acquired by each generation, the vigorous and intelligent race of the Tatra that we have observed. It is partly through an analogous mechanism that one might undoubtedly explain the formation of the present-day Anglo-American. In their battle against nature that the first American pioneers undertook, it was necessary to either tame it or die. Only the most vigorous, most intelligent, and most capable were able to be triumphant and bequeath to their descendants the qualities that had made them victorious.

The environment and natural selection therefore have to be important factors in the formation of the race currently living at the foot of the Tatra. But it is necessary not to forget that the environment can only act under certain special conditions, very often unrecognized. If the environment is a strong factor, heredity, which represents the aptitudes accumulated during the passage of an immense length of time, is an even much more powerful factor. Numerous historical examples prove that when a race is ancient, the qualities fixed by heredity are so stable that the environment is henceforth unable to act on it, and that this race will perish rather than transform itself. It is thus that in all latitudes the sons of Israel conserve their invariable type; it is also in this manner that the scorching soil of Egypt has been powerless, despite its energy, to transform the very old races who have successively invaded it, and who all have found here their tomb. Only heredity is strong enough to struggle against heredity, and for this reason the environment can only have an effect upon new races, that is to say, upon races resulting from the interbreeding between different peoples possessing different hereditary aptitudes. Under similar conditions, influences so heavy of the past find themselves annulled or dissociated by hereditary influences of an equal weight, and the environment, not having anymore then to struggle against such influences, can freely act.

Does the population of Podhale find itself in these conditions where the environment is able to exert a powerful effect? Is this population, in a word, the product of crossbreedings occurring at an earlier period between dissimilar elements? It appears evident to us that both must be so. Now that this population is numerous enough to provide for itself, it does not crossbreed anymore with other peoples; and, by dint of intermixing more and more with itself as well as submitting itself to the action of the same environment and same natural selection process, it tends to become homogeneous. But in an earlier time, when the steeply sloped and hardly accessible regions of the Tatra served as shelter for any adventurers from neighboring countries who, for various reasons, had need for refuge, all these individuals of diverse origins would necessarily and unceasingly intermix. One should realize that the most varied elements must have been present by recalling how diverse the nationalities are who surround the Tatra, and how numerous have been the peoples who have invaded this part of Europe since the days of the primitive Aryans and the hordes of Attila.

In order to complete the preceding study, it will be necessary to determine the elements that were able to contribute in former times to the formation of the present race. The solution to such a problem is not easy, because there does not exist any historical document that permits us to know in what manner the peopling of the villages of Podhale has been carried out.

But, lacking historical documents, the combined resources of anthropology, linguistics, and psychology allow us to make conjectures, albeit somewhat removed from the truth, about the elements which have contributed to form the present population of Podhale.

In all likelihood the principal core of the Podhaleans was fashioned out of the Poles. The mountainfolk of the Tatras are related to the Poles by several psychological characteristics and, moreover, speak their language. It is with this primitive Polish core that the quite varied populations which we have previously identified must have mixed. Among those who certainly played an important role, the Slovaks deserve first mention. Slovaks and Podhaleans today form, as we have said, two distinctly separate peoples who do not interbreed anymore with each other; but it appears evident that this may not have been always so. We can sometimes find proof of this fact in various parts of Podhale, notably in the village of Koscielisko, one of the nearest to the Hungarian border, by observing individuals of tall height (quite similar to the Slovaks) who by their elevated stature stand in contrast with their compatriots of short height. These are undoubtedly atavistic influences from ancestral forms which have made their reappearance in the present-day race, and which tend more and more to disappear as a result of crossbreedings by the Podhaleans with recent influences.

The probability of the influence of Slovak blood from a more or less remote time is also confirmed by linguistic indications. The language spoken throughout the Tatras is Polish, but the Slovakian influence amongst the Podhaleans is proven by the alteration of certain words, especially by the abandonment of the nasal vowels as well as the elimination of proper phonetic signs in the former of these languages: such as, for example, the frequent employment of the letter H in place of the letter G--for example *hruby* instead of *gruby*.⁷ One also finds the vowel A replaced by the vowel E, as in *czerny*; the vowel O replaced by A or E, as happens in Slovakian. The verb "to be" is frequently conjugated in the Slovakian manner; for example, *ja sem* (I am), instead of *ja jestem*; *ty sy* (you are), instead of *ty jestes*. Finally, a certain number of words, like *czesta* (way), *bran* (border), etc. are purely Slovakian.

Psychology likewise offers us valuable resources in this difficult task of reconstitution. The Podhaleans, as we have said, are literate people, musicians, poets, and very religious. The environment--above all an environment as harsh as that of Podhale--can hardly create such qualities. It is therefore probable that heredity alone was able to have produced them. Now, among the races that surround Podhale, there are scarcely any but the Ruthenians possessing these aptitudes. In the Ruthenians these aptitudes are combined with a quite capricious nature, a lack of energy, activity, and perseverance which is the opposite of the qualities that the Podhaleans possess; but the contrary qualities possessed by the latter had to have been engendered by the conditions of existence that we have detailed. It is from the influence of Ruthenian blood then that we are inclined to attribute the previously mentioned particularities. As for the quite remarkable development of the skull among the Podhaleans, it does not seem to us

that it is the result of ancestral influences, but is likely the consequence forced by the continual exercise of intelligence and activity that they are obliged to engage in constantly. It is an elementary fact of physiology that organs exercised develop and expand; less than any other, the brain does not know how to avoid this law.

We shall not persist anymore with our conjectures relative to the origin of the elements that may have contributed in earlier times to form the present-day Podhaleans. As incomplete as they have to be, our conjectures suffice to demonstrate whatever light today's scientific methods are able to cast upon the origins of a people (while tradition and history remain entirely silent on such). The main fact to remember, because it seems to us clearly proven, is that there is an on-going formation at the foot of the Tatras of a new race differing significantly from those who have contributed to form it. From the results of our study, the process responsible for this race's formation can be summarized in the following manner.

In the remote past, the race which presently populates the Podhale was formed through a blending of individuals originating from very different peoples. As these individuals isolated themselves more and more, by not intermixing with any others but themselves, and by incessantly submitting themselves to the action of the same environment and same natural selection process, the primitive agglomeration became more and more homogeneous; it ended up forming a new race whose homogeneity will be able to increase further, but which already possesses common hereditary qualities which clearly distinguish it from all the surrounding races.

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We shall conclude what we have to say here about the present state of anthropology and the transformations of which she is capable. In pointing out the way which it seems to us that this science must engage itself, we have often cited certain facts emanating from our own research, and we have inferred theories, some of which may be contested. But theories come from individual interpretations which are independent of the facts upon which they are based. Future anthropologists will perhaps be able to modify with their discoveries some of our results, though the methods that we have utilized to obtain them may remain a mystery to these scientists.

Gustave Le Bon

FOOTNOTES

¹ In declaring that the majority of the anthropological measurements carried out for the last twenty years at the price of considerable labor are useless, and that the time thus lost could have been much better employed, I have only stated above what a great many anthropologists have thought to themselves. Faced with the evidence, the most obdurate are reduced to publicly confessing their old errors. I found a curious example of these confessions in the latest issue of the *Bulletins de la Societe d'Anthropologie*. "You know only," wrote a former assistant of Broca, "that the measurements which the travellers have transmitted to us and which have produced such an effect upon those who obligate themselves to regard them, are dead letters, because we do not have anything which one can compare and reconcile them with." The author added that when, for want of a basis of operation, "we proceed at random, ignoring that which gives



us systems of operations and has value, the measurements that we take in our journeys will be sterile and will only result in a waste of time." As for cranial measurements, the same author judges them in the following way: "Today it is the skull that is in vogue; emanating from the ideas and *a priori* issues of phrenology concerning the topographical relations of the skull and brain, one believes that it can provide the best indicators for distinguishing the races. This is an error."

This ferocious zeal of the neophyte breaking his ancient idols produces some pleasure, but it is difficult to share in it. The majority of the measurements are surely useless, but there are certainly some like that of the size which are not. Choosing to reject en bloc the employment of exact methods in anthropology and limiting oneself to the impressions produced by the exterior aspect, this is to go backward many centuries and profess a little too much disdain for the work of Broca (pictured left). It is truly saddening to see the ease with which certain pupils of the eminent master, all speaking without cease of their admiration for him, do not waste an occasion to indirectly attack his work. It was surely not when Broca was living that one would have made the declarations that I have cited above, or would have challenged his having been the true creator of craniometry that one now pretends to have experienced many centuries of existence. It seems that Broca presaged that which has attended his memory when, in his last work, he retraced the history of craniology and showed what it was before him. It is not without sadness, I repeat, that we are witnesses to this spectacle, and it is certainly the same sentiment which the former president of the Societe d'Anthropologie, the learned Professor Dally, yielded to when, in a recent publication, he expressed astonishment at seeing the author, whose extracts I have reproduced above, publish a "troublesome imitation" of a work of Broca where the name of the author himself was not even mentioned.

² A printing of a portion of this work has been made, and we have it available for persons in which this question may be of interest.

³ The language spoken by the Podhaleans is Polish mixed with usages a little old-fashioned. The idiom spoken by the Slovaks sufficiently approximates Polish, because the two peoples quickly succeed in understanding each other; but it matches even more so to Czech and to Moravian, languages presently spoken throughout a large part of the former kingdoms of Bohemia and Moravia. It turns out that it is, in reality, the same language which is spoken between Prague, Budapest and Warsaw. With Polish, Czech, Slovakian, and Moravian being as close to Ruthenian as French is near to Italian, and as Ruthenian, which is spoken by 15 million individuals, does not differ much from Russian, one sees that in reality no other European language is spoken over an extended territory as vast as that covered by the Slavic language. If, as one might claim quite wrongly, a race can be defined by saying that it is the assemblage of populations speaking the same language, then no other race can pretend to equal the importance of the Slavic race in Europe.

⁴ *L'Homme et les sociétés, leurs origines et leur histoire*, by Dr. Gustave Le Bon, Vol. II, 1881.

⁵ These measurements have all been performed with a simple tape-measure and the instrument that I have named the *compass of coordinates*, which is extremely easy to carry in one's pocket. A person can easily build this instrument by following the model that I have presented in the *Bulletins de la Société d'anthropologie* and in the work that I have published under this title: *la Méthode graphique et les appareils enregistreurs, avec 63 figures dessinées en partie d'après des instruments nouveaux au laboratoire de l'auteur*.

⁶ "Photography," recently wrote a distinguished travelling anthropologist, Colonel Duhoussert, "today asserts itself as the most accurate basis of all anthropological studies. To be sure, camera equipment producing instantaneously the face and profile of a subject is less cumbersome than the bulky tools that yield the proportions of a skull to nearly 1 millimeter." The importance of photography is nowadays no more denied than by the behind-the-times craniologists, for this art has rendered cooperation between subject and investigator as little useful as what the stagecoaches have become after the invention of the railroads. It is childish to contest the fundamental utility of an art of which all the anthropological laboratories of Europe (with maybe one exception) make daily use. In order to speak about the deformations produced by cameras, it is necessary to be up-to-date on the progress realized in the construction of aplanatic lenses over the last several years as well as to understand the elementary laws of perspective. The majority of photographs made with an artistic aim in mind obviously do not allow for measurements to be taken; but, in order to be able to utilize photographs for this purpose, it's sufficient to observe some very simple rules about 1) the focal length of the lenses one can choose, 2) the distance which exists from the photographer to the individual whose image is to be reproduced, and 3) the successive positions of the face and profile to procure of the subject. In certain easy observing conditions, the individual to be photographed can be considered as a noticeably flat image, and the contours reproduced in the picture are just as exact as are those of the geographical maps reduced or enlarged by photography. In order to get photos of the various types of individuals rigorously exact, that is to say, perspective images that substantially conform in practice with geometric projections, the rules to follow are infinitely easier than those that allow for exactly reconstructing the geometric form of objects in most plans, as still is the fashion nowadays and as Monsieur Civiale notably has done for the chain of the Alps. Broca, who well understood the usefulness of photography, asked me towards the end of his life if I would be able to install for him a photo laboratory on his premises, which unfortunately proved too confined to permit it.

⁷ I owe this precious information to Professor Kopernicki. He very much desired to communicate with me upon reading the proofs contained in my treatise, in order to confirm my hypothesis—a hypothesis that he entirely shares concerning the influence from an earlier time of which there does not exist, moreover, any historical testimonial, that the Podhaleans intermixed with the Slovaks. I am indebted to this learned anthropologist as well as to Doctors Chalubinski and Wrzesniowski, professors at the University of Warsaw, who graciously consented to accompany me on several of my excursions, all of whom I give thanks to for the service that they have provided to the revision of my map and report.